



सरकारी गजट, उत्तराखण्ड

उत्तराखण्ड सरकार द्वारा प्रकाशित

रुड़की

खण्ड-८] रुड़की, शनिवार, दिनांक २८ अप्रैल, २००७ ई० (विशाख ०८, १९२९ शक समवत्)

[संख्या-१७

विषय—सूची

प्रत्येक भाग के पृष्ठ अलग-अलग दिये गए हैं, जिससे उनके अलग-अलग खण्ड बन सकें।

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માગ ૧

વિઝાપ્તિ-અવકાશ, નિયુક્તિ, સ્થાન-નિયુક્તિ, સ્થાનાન્તરણ, અધિકાર ઔર દૂસરે વૈયક્તિક નોટિસ

રાજસ્વ વિભાગ

કાર્યાલય જ્ઞાપ

20 અપ્રૈલ, 2007 ઈં ૦

સંખ્યા 135 / ૧૮(૧) / ૨૦૦૭-એતદ્વારા રાજ્યપાલ ઇસ આદેશ કે ગજટ મેં પ્રકાશિત હોને કી તારીખ સે તહેસીલ વ જનપદ પૌઢી ગઢવાલ કે વિકાસ ખણ્ડ પૌઢી મેં સ્થિત રાજસ્વ ગ્રામ "મરગદના" કા નામ પરિવર્તિત કર "રાધાબલ્લમ-પુરમ" કિયે જાને કી સહર્ષ સ્વીકૃતિ પ્રદાન કરતે હોય।

૨-ઇસ આદેશ કી કિરી બાત કા પ્રભાવ કિસી વિધિ નાગાલય મેં જિસમે અચ તક ઉક્ત રાજસ્વ ગ્રામ કે સંગન્ય મેં અધિકારિતા કા પ્રયોગ કિયા હૈ, પહેલે સે પ્રારમ્પ કી ગયી યુ અનિનીત કિસી વિધિક કાર્યકાહી પર નહીં પઢેગા।

આગ્રા સે.

એન૦ એસ૦ નપલચ્યાલ,
પ્રમુખ સચિવ।

પત્રાક ૫૯૧૬ સચિવ/ઓફિઝિલ/૦૭
દિનાંક ૧૭ અપ્રૈલ, ૨૦૦૭

પ્રેષક,

ઓફિઝિલ સંખ્યા
સચિવ,
ઔદ્યોગિક વિકાસ,
ઉત્તરાખણ્ડ શાસન।

સેવા મે.

જિલાધિકારી,
હરિદ્વાર।

વિષય : બી૦૧૯૦૧૦૧૧૦ પરિસર, હરિદ્વાર મેં સ્થિત ઔદ્યોગિક દોચ્ચ કી ભૂમિ કે નામાન્તરણ કે સંગન્ય મેં।

મહોદય,

કૃપયા રાસગાદેશ સંખ્યા ૬૩૨/ઓફિઝિલ/૧૧૨-ઠથ્યોગ/૨૦૦૪, દિનાંક ૦૨-૦૪-૨૦૦૪ કા સંદર્ભ યાહે કા કાઢું કરે, જિસમે બી૦૧૯૦૧૦૧૧૦ દ્વારા ગ્રામ રાવલી, મેહદૂદ, સલીમપુર વ રાનીપુર, જ્વાલાપુર, બાંસોવાલી મેં સ્થિત ગૂમિ કો ઉત્તરાખણ્ડ શાસન કો હસ્તાન્તરિત કરને કા નિર્ણય લિયા ગયા હૈ એવ ઉસકા કબ્જા જિલાધિકારી કે માધ્યમ સે સિદ્ધકુલ કો પ્રાપ્ત હો ચુકા હૈ।

ઉક્ત કે ક્રમ મેં નિર્દેશિત કિયો જાતો હૈ કી કૃપયા ઇસકા નામાન્તરણ ઉત્તરાખણ્ડ સરકાર મહામહિમ રાજ્યપાલ, પ્રદાન સિદ્ધકુલ કે નામ કરાને કો કષ્ટ કરે। યાં આદેશ રાજસ્વ વિભાગ કી સહમતિ સે પ્રેષિત કિયે જા રહે હૈને।

એસ૦ એસ૦ સંખ્યા,
સચિવ।

પી૦૧૯૦૧૦૧૦ (આર૦૧૦) ૧૭ હિન્ડી ગજટ / ૧૬૬-માગ ૧-૨૦૦૭ (કમ્પ્યુટર / રીજિયો)।

મુદ્રક એવમ પ્રકાશક-સ્પષ્ટ નિર્દેશક, રાજકીય મુદ્રણાલય, ઉત્તરાખણ્ડ, રૂઢકી।



सरकारी गज़ट, उत्तराखण्ड

उत्तराखण्ड सरकार द्वारा प्रकाशित

रुड़की, शनिवार, दिनांक 28 अप्रैल, 2007 ई० (विशाख ०८, १९२९ शक समवत्)

भाग १-क

नियम, कार्य-विधिया, आज्ञाएँ, विभिन्न विधियों इत्यादि जिनको उत्तराखण्ड के राज्यपाल महोदय, विभिन्न विभागों के वायन तथा राजस्व परिषद् ने चारी किया

UTTARAKHAND ELECTRICITY REGULATORY COMMISSION
80 Vasant Vihar, Phase-I, Dehradun

NOTIFICATION

09th April, 2007

Uttarakhand Electricity Regulatory Commission (State Grid Code) Regulations, 2007

No. F-(9)14/RG/UERC/2007/33 - In exercise of the powers conferred by clause (zp) of section 181 read with clause (h) of sub-section (1) of section 86 of the Electricity Act, 2003 (36 of 2003), the Uttarakhand Electricity Regulatory Commission hereby makes the following regulations, namely:

CHAPTER 1—GENERAL

1.1 Short title, extent and commencement—

- (1) These Regulations may be called the Uttarakhand Electricity Regulatory Commission (State Grid Code) Regulations, 2007.
- (2) These Regulations shall extend to the whole of the State of Uttarakhand.
- (3) These Regulations shall come into force with effect from the date of their publication in the official gazette.

1.2 Introduction—

The State Grid Code (SGC) lays down the rules, guidelines and standards to be followed by various agencies and participants in the Intra-State Transmission System (IaSTS) to plan, develop, maintain and operate the Intra-State Transmission System, a part of Northern Region Grid System, in most efficient, reliable, economic and secure manner, while facilitating a healthy competition in the generation and supply of electricity.

1.3 Objective—

The SGC brings together a single set of technical rules, encompassing all the Utilities connected to/or using the Intra-State Transmission System (IaSTS) and provides the following –

- (1) Documentation of the principles and procedures which define the relationship between the various Users of the Intra-State Transmission System (IaSTS), as well as the Regional and State Load Despatch Centres.
- (2) Facilitation of the operation, maintenance, development and planning of economic and reliable State Grid.
- (3) Facilitation for beneficial trading of electricity by defining a common basis of operation of the IaSTS, applicable to all the Users of the IaSTS.

1.4 Scope and Date of Application—

- (1) These regulations shall apply to all parties that connect with and/or utilize the IaSTS or those, including SLDC, which are required to abide by the principles and procedures defined in the SGC in so far as they apply to that party.
- (2) Transmission Licensee, forming part of the IaSTS, and User having connection(s) to the IaSTS, as on date of publication of these Regulations shall be given a maximum period of one year to comply with the following requirements under these Regulations. —
 - (i) Entering into a connection agreement in accordance with Regulation 3.6;
 - (ii) Providing for protection systems in accordance with Regulations 3.9.2 and 3.9.3;
 - (iii) Providing for communication facilities in accordance with Regulation 3.12;
 - (iv) Providing for system recording instruments in accordance with Regulation 3.13;
 - (v) Developing Single Line Diagrams in accordance with Regulation 3.16(1);
 - (vi) Developing Site Common Drawings in accordance with Regulation 3.17(2); and
 - (vii) Installation and Operation of meters in accordance with Metering Code developed as per Regulation 6.1.
- (3) The date of applicability of provisions related to Free Governor Action, as provided in these Regulations, shall be consistent with relevant provisions as provided in the Grid Code specified by Central Electricity Regulatory Commission under clause (h) of sub-section (1) of section 79 of the Act.
- (4) Persons availing of open access, who are connected to and/or use the IaSTS, shall comply with Transmission Open Access Regulations and Distribution Open Access Regulations notified, if any, by the Commission.

1.5 Structure of the IEGC—

This SGC contains the following.—

Chapter I: General—

This Chapter largely deals with the scope and application of these regulations and with constitution and role of Grid Coordination Committee.

Chapter II: Planning Code for Intra-State transmission—

This Chapter provides the policy to be adopted in the planning and development of bulk power transfer and associated IaSTS. The Planning Code lays out the detailed information exchange required between the planning agencies and the various participants of the power system for load forecasting, generation availability and power system planning etc. for the future years under study. The Planning Code stipulates the various criteria to be adopted during the planning process.

Chapter III: Connection Conditions—

This Chapter specifies minimum technical and design criteria to be complied with by any agency, connected to the system or seeking connection to the IaSTS, to maintain uniformity and quality across the system. This includes:—

- (a) procedure for connection to the IaSTS
- (b) site responsibility schedule

Chapter IV—Operating Code for State Grid—

This Chapter describes the operational philosophy to maintain efficient, secure and reliable Grid Operation and contains the following parts:-

- (a) Operating Policy.
- (b) System security aspects

This part describes the general security aspects to be followed by generating companies and all State Constituents of the Grid.

- (c) Demand Estimation for operational purposes

This part details the procedures to estimate the demand by the various constituents for their systems for the day/week/month/year ahead, which shall be used for operational planning.

- (d) Demand management

This part identifies the methodology to be adopted for demand control by each State constituent as a function of the frequency and deficit generation.

- (e) Periodic Reports

This part provides various provisions for reporting of the operating parameters of the State Grid such as frequency profile, voltage profile etc.

- (f) Operational liaison

This part sets out the requirement for the exchange of information in relation to normal operation and/or events in the State Grid.

- (g) Outage Planning

This part indicates procedure for outage planning

- (h) Recovery procedures

This part contains the procedures to be adopted following a major grid disturbance, for black start and resynchronization of islands, etc.

- (i) Event Information

This part indicates the procedure by which events are reported and the information exchange etc. takes place.

Chapter V—Scheduling & Despatch Code—

This part deals with the procedure to be adopted for scheduling and despatch of generation of the State Generating Stations (SGS) including complementary commercial mechanisms, on a daily basis with the modality of the flow of information between the 1aSGS, other Users and the State Load Despatch Centre (SLDC).

Chapter VI—Metering Code—

Metering Code provides for development of minimum requirements and standards for installation and operation of meters, for commercial and operational purposes, to be provided by user or transmission licensee at the Connection Point.

Chapter VII—Inter-State Exchanges—

This Chapter deals with special considerations for operation of inter-State links.

Chapter VIII—Management of SGC—

This Chapter deals with the procedure for review/amendment and management of SGC.

1.6 Compliance--

- (1) State Transmission Utility shall be responsible for monitoring the compliance by the Users and Transmission System Licensees with the provisions, contained in Chapter II, Chapter III and Chapter VI of these Regulations and with the rules and procedures developed under such provisions.

Provided that the State Transmission Utility shall not unduly discriminate against or unduly prefer any User or Transmission Licensee.

- (2) State Load Despatch Centre shall be responsible for monitoring the compliance of the Users and Transmission System Licensees with the provisions contained in Chapter IV and Chapter V of these Regulations and with the rules and procedures developed under such provisions:
- Provided that the State Load Despatch Centre shall not unduly discriminate against or unduly prefer any User or Transmission Licensee.
- (3) In case of persistent non-compliance of the provisions of State Grid Code and/or of the rules and procedures developed under such provisions, such matter shall be reported to the Commission.
- (4) All directions issued by the Northern Region Load Despatch Centre to any Transmission Licensee or any other Licensee of the State or generating company (other than those connected to Inter-State transmission system) or sub-station in the State shall be issued through the State Load Despatch Centre and the State Load Despatch Centre shall ensure that such directions are duly complied with the licensee or generating company or sub-station.
- (5) State Load Despatch Centre may give such directions to and exercise such supervision and control over a State Constituent as may be required for ensuring the integrated grid operation and for achieving the maximum economy and efficiency in the operation of power system.
- (6) Every Transmission Licensee and User connected with the operation of the power system shall comply with the direction issued by the State Load Despatch Centre under sub-regulation (5) of this Regulation.
- (7) If any dispute arises with reference to the quality of electricity or safe, secure and integrated operation of the State Grid or in relation to any direction given under sub-regulation (5) of this Regulation, it shall be referred to the Commission for decision:
- Provided that pending the decision of the Commission, the direction of the State Load Despatch Centre shall be complied with by the Transmission Licensee or User.
- (8) Consistent failure to comply with the provisions of the State Grid Code or with the rules and procedures developed under such provisions, by User or Transmission Licensee, may lead to disconnection of the Plant and/or Apparatus of such User or Transmission Licensee.
- (9) Nothing contained in this Regulation shall in any manner impact the powers conferred upon the Commission to monitor and enforce compliance by the Users and Transmission Licensees with the provisions of State Grid Code and with the rules and procedures developed under such provisions.

1.7 Free Governor Action—

- (1) All thermal and hydro (except those with zero pondage) generating units shall operate in Free Governor Mode with effect from the date to be separately notified by the Commission.
- (2) Any exemption from the above may be granted only by the Commission for which the concerned State constituent/ agency shall file a petition in advance.
- (3) The Gas turbine/Combined Cycle Power Plants and Nuclear Power Stations shall be exempted from Regulations 3.10(3), 3.10(4), 4.2(5), 4.2(6), 4.2(7) and 4.2(8) till the Commission reviews the situation.

1.8 Charge/Payment for Reactive Energy Exchanges--

The rate for charge/payment of reactive energy exchanges (according to the scheme specified in Regulation 5.6 shall be at such rate in paisa/kVArh w.e.f. such date, and shall be escalated at such rate in paisa/kVArh per year thereafter, as the Commission may determine in this behalf.

1.9 Exemptions—

Any exemption from provisions of SGC shall become effective only after approval of the Commission, for which the agencies will have to file a petition in advance.

1.10 Obligations under Grid Code—

The provisions of these Regulations are in addition and not in derogation to the Grid Code issued by the Central Commission under clause (h) of sub-section (1) of section 79 of the Act. In case of any conflict between the two, the latter shall prevail. The State Constituents/SLDC/other agencies shall also comply with the provisions of Grid Code in so far as they relate to them.

1.11 Grid Coordination Committee—

- (1) A Grid Coordination Committee shall be constituted by the State Transmission Utility within thirty (30) days from the date of notification of these Regulations.
- (2) The Grid Coordination Committee shall be responsible for the following matters, namely:—
 - (i) Facilitating the implementation of these Regulations and the rules and procedures developed under the provisions of these Regulations;
 - (ii) Assessing and recommending remedial measures for issues that might arise during the course of implementation of provisions of these Regulations and the rules and procedures developed under the provisions of these Regulations;
 - (iii) Review of the State Grid Code, in accordance with the provisions of the Act and these Regulations; and
 - (iv) Such other matters as may be directed by the Commission from time to time.
- (3) The Grid Coordination Committee shall comprise of the following members:—
 - (i) One member from State Transmission Utility;
 - (ii) One member of the State Load Despatch Centre;
 - (iii) One member each to represent the State and Privately owned generating companies in the State;
 - (iv) One member to represent the Transmission Licensees in the State, other than the State Transmission Utility;
 - (v) One member to represent the state-owned Distribution Licensees in the State;
 - (vi) One member to represent the privately-owned Distribution Licensees in the State;
 - (vii) One member to represent the Electricity Traders in the State;
 - (viii) One member to represent the Western Region Load Despatch Centre; and
 - (ix) Such other persons as may be nominated by the Commission.

Provided that the member from State Transmission Utility shall be the Chairperson of the Committee :

Provided that the Member from State Load Despatch Centre shall be the Convener of the Grid Coordination Committee:

Provided further that the State Transmission Utility shall, in coordination with State Load Despatch Centre, facilitate and manage the functioning of the Grid Coordination Committee.

- (4) The members of the Grid Coordination Committee shall be selected as follows:—
 - (i) The concerned Director of State Transmission Utility, having the responsibility of looking after technical activities of State Transmission Utility shall be the member referred to in clause (a) of sub-regulation (3) above,
 - (ii) The member referred to in clause (b) of sub-regulation (3) above shall be the head of State Load Despatch Centre not below the rank of General Manager;
 - (iii) The members referred to in clauses (c), (d), (e), (f), (g) and (h) of sub-regulation (3) above shall be nominated by their respective organizations, which organizations will be selected in rotation from among all such organizations in the State. The term of each such member, selected in rotation, shall be one (1) year.

Provided that the members nominated by each of the organization to the above Committee shall be holding a senior position in their respective organization.

1.12 SLDC Responsibility—

State Load Despatch Centre shall discharge the functions assigned to it under the provisions of the Act and these Regulations in an independent and unbiased manner.

Provided that in event of State Load Despatch Centre being operated by the State Transmission Utility, as per first proviso of sub-section (2) of section 31 of the Electricity Act, 2003 adequate autonomy shall be provided to the State Load Despatch Centre for it to able to discharge its functions in the above mentioned manner.

1.13 Procedures to be developed by State Load Despatch Centre—

Procedures and processes developed by State Load Despatch Centre, in discharge of its functions under the provisions these Regulations, shall clearly provide for the following aspects, wherever applicable:—

- (i) Roles and Responsibilities of SLDC, ALDCs and State constituents;
- (ii) Communication facilities between SLDC, ALDCs and State constituents;
- (iii) Information flow between SLDC, ALDCs and State constituents; and
- (iv) Any other aspect considered appropriate by the State Load Despatch Centre or the Commission;

Provided that such procedures shall be developed in consultation with State Constituents and shall be consistent with SGC to enable compliance with the requirement of this SGC.

Provided further that such procedures shall be submitted, within three (3) months, to the Commission for approval.

1.14 Definitions—

- (1) In these Regulations, unless the context otherwise requires—
 - (a) "Act" means the Electricity Act, 2003 (36 of 2003), including amendments thereto;
 - (b) "Automatic Voltage Regulator" means a continuously acting automatic excitation control system to control the voltage of a Generating Unit measured at the generator terminals;
 - (c) "Beneficiary" means a person who has a share in an IaSGS/ISGS or bilateral exchanges including open access users;
 - (d) "Black Start Procedure" means procedure necessary to recover the grid from a partial or a total blackout;
 - (e) "Bulk Power Transmission Agreement (BPTA)" means the commercial agreement between the transmission licensee and a long term customer for the provision of transmission services;
 - (f) "BIS" means the Bureau of Indian Standards;
 - (g) "Capacitor" means an electrical facility provided for generation of reactive power;
 - (h) "Commission" means the Uttarakhand Electricity Regulatory Commission;
 - (i) "Connection Agreement" means an agreement setting out the terms relating to connection to and/or use of the Intra-State transmission system;
 - (j) "Connection Point" means a point at which a User's or Transmission Licensee's Plant and/or Apparatus connects to the intra-State transmission system;
 - (k) "Constituent" means a Distribution Licensee or Deemed Distribution Licensee of the State, a Generating Company having an IaSGS, State Transmission Utility, State Transmission Licensees, Open Access Users;
 - (l) "Demand" means the demand of Active Power in MW and Reactive Power in MVAR of electricity unless otherwise stated;
 - (m) "Despatch Schedule" means the ex-power plant net MW and MWh output of a generating station, scheduled to be exported to the State Grid from time to time;
 - (n) "df/dt Relay" means a relay which operates when the rate of change of system frequency (over time) goes higher than a specified limit and initiates load shedding;
 - (o) "Disturbance Recorder" means a device provided to record the behaviour of the pre-selected digital and analog values of the system parameters during an Event;

- (p) "Data Acquisition System" means a device provided to record the sequence of operation in time, of the relays/equipments/system parameters at a location;
- (q) "Drawal Schedule" means the ex-power plant, MW that a Distribution Licensee or Open Access User is scheduled to receive from the IaSGS or ISGS, including bilateral exchanges from time to time;
- (r) "Entitlement" means share of a beneficiary (in "MW and MWH) in the installed capacity/ output capability of an ISGS/IaSGS or in the bilateral exchanges;
- (s) "Event" means an unscheduled or unplanned occurrence in the intra-State transmission system including faults, incidents and breakdowns;
- (t) "Event Logger" means a device provided to record the sequence of operation in time, of the relays/ equipments at a location during an Event;
- (u) "Ex-Power Plant" means Net MW/MWh output of a generating station, after deducting auxiliary consumption and transformation losses;
- (v) "Fault Locator" means a device provided at the end of a transmission line to measure/indicate the distance at which a line fault may have occurred;
- (w) "Flexible Alternating Current Transmission (FACT)" means facilities that enable power flows on A.C. lines to be regulated, to control loop flows, line loading etc.;
- (x) "Force Majeure" means any event which is beyond the control of the agencies involved which they could not foresee or with a reasonable amount of diligence could not have foreseen or which could not be prevented and which substantially affect the performance by either agency such as, but not limited to—
 - (i) Acts of God, natural phenomena, including but not limited to floods, droughts, earthquakes and epidemics,
 - (ii) Acts of any Government domestic or foreign, including but not limited to war declared or undeclared, hostilities, priorities, quarantines, embargoes,
 - (iii) Riot or Civil Commotion,
 - (iv) Grid's failure not attributable to agencies involved;
- (y) "Forced Outage" means an outage of a Generating Unit or a transmission facility due to a fault or other reasons which has not been planned;
- (z) "Generating Unit" means an electrical Generating Unit coupled to a turbine within a Power Station together with all Plant and Apparatus at that Power Station (up to the Connection Point) which relates exclusively to the operation of that turbo-generator;
- (aa) "Good Utility Practices" means any of the practices, methods and acts engaged in or approved by a significant portion of the electric utility industry during the relevant time period which could have been expected to accomplish the desired results at a reasonable cost consistent with good business practices, reliably, safely and with expedition;
- (bb) "Governor Droop" means in relation to the operation of the governor of a Generating Unit means the percentage drop in system frequency which would cause the Generating Unit under free governor action to change its output from zero to full load;
- (cc) "High Tension" or "HT" means all voltages defined as "high" or "extra high" voltage under clause (av) of sub-rule (1) of Rule 2 of the Indian Electricity Rules, 1956 and corresponding voltage classifications as may be specified in accordance with clause (c) of sub-section (2) of Section 185 of the Act;
- (dd) "Independent Power Producer (IPP)" means a generating company not owned/controlled by the Central/State Government;
- (ee) "Inter-State Generating Station (ISGS)" means a Central/other generating station in which two or more states have shares and whose scheduling is to be coordinated by the RLDC;

- (ff) "Intra-State Generating Station (IaSGS)" means a State/other generating station which is connected to/utilises IaSTS and whose scheduling is to be coordinated by the SLDC;
- (gg) "Inter-State Transmission System (ISTS)" includes—
- any system for the conveyance of electricity by means of a main transmission line from the territory of one State to another State;
 - the conveyance of energy across the territory of an intervening State as well as conveyance within the State which is incidental to such inter-State transmission of energy;
 - the transmission of electricity within the territory of State on a system built, owned, operated, maintained or controlled by CTU;
- (hh) "Intra-State Transmission System (ISTS)" means any system for transmission of electricity other than an inter-State transmission system and includes—
- Any system for the conveyance of electricity by means of a main transmission line within the territory of the State;
 - The transmission of electricity within the territory of State on a system built, owned, operated, maintained or controlled by STU.
- Provided that the definition of point of separation between a transmission system and distribution system and between a Generating Station and transmission system shall be guided by the provision of the Regulations notified by the Authority under clause (b) of section 73 of the Electricity Act, 2003.
- (ii) "IEC" means the International Electro-technical Commission;
- (jj) "Load" means the MW/MWh consumed by a utility/installation;
- (kk) "Low Tension" or "LT" means all voltages other than those defined as "high" or "extra high" voltage under clause (av) of sub-rule (1) of Rule 2 of the Indian Electricity Rules, 1956 and corresponding voltage classifications as may be specified in accordance with clause (c) of sub-section (2) of section 185 of the Act;
- (ll) "Maximum Continuous Rating" means the normal rated full load MW output capacity of a Generating Unit which can be sustained on a continuous basis at specified conditions;
- (mm) "National Grid" means the entire inter-connected electric power network of the country, which would evolve after inter-connection of Regional grids;
- (nn) "Net Drawal Schedule" means the drawal schedule of a beneficiary after deducting the apportioned transmission losses (estimated);
- (oo) "Operation" means a scheduled or planned action relating to the operation of a System;
- (pp) "Operating range" means the operating range of frequency and voltage as specified under the operating code (Chapter-5);
- (qq) "State Pool Account" means State account for (i) payments regarding unscheduled - Inter-changes (State UI Account) or (ii) reactive energy exchanges (State Reactive Energy Account), as the case may be;
- (rr) "Reactor" means an electrical facility specifically designed to absorb Reactive Power;
- (ss) "Regional Power Committee (RPC)" means a Committee established by resolution by the Central Government for a specific region for facilitating the integrated operation of the power systems in that region;
- (tt) "RPC Secretariat" means the Secretariat of the RPC;
- (uu) "State Energy Account (SEA)" means a State energy account, for the billing and settlement of 'Capacity Charge', 'Energy Charge', 'UI Charge' and 'Reactive Charge';
- (vv) "State Grid" means the entire synchronously connected electric power network of the State, comprising of IaSTS, IaSGS and inter-State systems.

- (ww) "Regional Load Despatch Centre (RLDC)" means the Centre established under sub-section (1) of section 27 of the Act;
- (xx) "Share" means percentage share of a beneficiary in a generating station as notified by Appropriate Government or as agreed to in the agreement between the generating stations or trading/distribution licensees and their beneficiaries;
- (yy) "Single Line Diagram" means diagrams which are a schematic representation of the HV/EHV apparatus and the connections to all external circuits at a Connection Point incorporating its numbering nomenclature and labeling;
- (zz) "Site Common Drawing" means drawings prepared for each Connection Point, which incorporates layout drawings, electrical layout drawings, common protection/control drawings and common service drawings;
- aaa "Spinning Reserve" means generating capacity with some reserve margin at standard rated frequency of 50 Hz that is synchronized to the system and is ready to provide increased generation at short notice pursuant to despatch instruction or instantaneously in response to a frequency drop.
- bbb "SEB" means the State Electricity Board including the State Electricity Department.
- ccc "SERC" means State Electricity Regulatory Commission.
- ddd "State Load Despatch Centre (SLDC)" means the Centre established under sub-section (1) of Section 31 of the Electricity Act, 2003.
- eee "State Transmission Utility (STU)" means the Board or the Government Company specified as such by the State Government under sub-section (1) of section 39 of the Act.
- fff "Static VAR Compensator" or "Synchronous Condenser" means an electrical facility designed for the purpose of generating or absorbing Reactive Power.
- ggg) Area Load Despatch Centre means the offices and associated facilities of State Load Despatch Centre set up for different areas of the State for monitoring and control of the State Grid and includes any such offices and associated facilities set up by State Load Despatch Centre in future.
- hhh Time Block means block of 15 minutes each for which Special Energy Meters record specified electrical parameters and quantities with first time block starting at 00:00 Hrs.
- i) Transmission Planning Criteria means the policy, standards and guidelines issued by the CEA for the planning and design of the Transmission system.
- j) Under Frequency Relay means a relay which operates when the system frequency falls below a specified limit and initiates load shedding.
- kkk "User" is a term utilized in the various parts of the SGC to refer to the persons/agencies using the IaSTS, as more particularly identified in each part of the SGC.
- lll Words or expressions used herein and not defined shall have the meanings assigned to them under the Act.

CHAPTER 2—PLANNING CODE FOR INTRA-STATE TRANSMISSION

This Chapter comprises various aspects of Planning relating to Intra-State transmission systems.

2.1 Introduction—

The Planning Code specifies the policy and procedures to be applied in planning of State Grid and Inter-State links.

2.2 Objective—

The objectives of Planning Code are as follows —

- 1 To specify the principles, procedures and criteria which shall be used in the planning and development of the IaSTS and Inter State links.

- (2) To promote co-ordination amongst all State Constituents and agencies in any proposed development of the IaSTS
- (3) To provide methodology and information exchange amongst State Constituents and agencies in the planning and development of the IaSTS.

2.3 Scope:-

The Planning Code applies to STU other State Transmission licensees Intra-State Generating Station (IaSGS) connected to and/or using and involved in developing the IaSTS. This Planning Code also applies to Generating Companies IPPs, Open Access Users and other licensees regarding generation and/or transmission of energy to/from the IaSTS.

2.4 Planning Policy:-

- (1) The STU shall carry out planning process from time to time as per the requirement for identification of major intra-State transmission system including inter-State schemes which shall fit in with the perspective plan developed by the Authority
- (2) In addition to the major inter-State transmission system the STU shall plan from time to time system strengthening schemes need of which may arise to overcome the constraints in power transfer and to improve the overall performance of the grid. The intra-State transmission proposals including system strengthening scheme identified on the basis of the planning studies would be discussed, reviewed and finalized in the meetings of Grid Co-ordination Committee
- (3) Based on above the STU shall come out with a Transmission System Plan the format of which can be decided by the State Transmission Utility
- (4) The transmission system plan shall describe the plan for the IaSTS and shall include the proposed intra-State transmission schemes and system strengthening schemes for the benefit of all users

Provided that the transmission system plan may include information related not only to intra-State transmission lines but also additional equipment including transformers, capacitors, reactors, Static VAR Compensators and Flexible Alternating Current Transmission Systems

Provided further that the transmission system plan shall also include information on targets set in the preceding plans and progress achieved on the identified intra-State/inter-State transmission schemes and system strengthening schemes

- (5) The State Transmission Utility may for the purpose of preparing the transmission system plan under these Regulations seek such information as may be required by it from State Constituents including generation capacity addition, system augmentation and long-term load forecast and all (approved/pending) applications for open access

Provided that the Distribution Licensees shall have the primary responsibility for developing long term load forecasts for their respective license areas. The Distribution licensee may be guided by applicable provisions related to load forecasting as provided in the Distribution Code

Provided also that the State Transmission Utility shall consider but not be bound by the information provided under this Regulation in preparing the transmission system plan

- (6) The State Transmission Utility shall also consider the following for the purpose of preparing the transmission system plan under these Regulations:-

1. Plans formulated by the Authority for the transmission system under the provisions of clause (a) of section 73 of the Act
- (ii) Electric Power Survey of India report of the Authority
- iii) Grid Standards specified by the Authority under clause (d) of section 73 of the Act
- iv) Transmission Plan formulated by Central Transmission Utility under the provisions of Grid Code specified by Central Electricity Regulatory Commission under clause h of sub-section (1) of Section 79 of the Act
- v) Transmission Planning Criteria and Guidelines issued by the Authority
- (vi) Recommendations/inputs, if any, of the Regional Power Committee
- vii) Reports on National Electricity Policy, which are relevant for development of IaSTS; and

- (vii) Any other information/data source suggested by the Commission
- (7) All State Constituents and agencies will supply to the STU the desired planning data from time to time to enable it to formulate and finalize its plan
- (8) The plan reports shall contain a Chapter on additional transmission requirement which may include not only intra-State transmission lines but also additional equipment such as transformer capacitors reactors etc.
- (9) The plan report shall also indicate the action taken to fulfil the additional requirement and actual progress made on new schemes. These reports will be available to any interested party for making investment decision/connection decisions to the IaSTS
- (10) The State Transmission Utility shall send a copy of transmission system plan for the IaSTS to the Commission by 31st December each year and also publish it on its Internet website. The STU shall also make the same available to any person upon request
- (11) As voltage management plays an important role in intra State transmission of energy special attention shall be accorded to planning of capacitors reactors SVC and Flexible Alternating Current Transmission Systems (FACTS), etc

2.5 Planning Criteria—

- (1) The planning criteria shall be based on the security philosophy on which the IaSTS has been planned. The security philosophy may be as per the Transmission Planning Criteria and other guidelines as given by the Authority. Provided that State Transmission Utility shall carry out appropriate system studies while developing the transmission system plan
- (2) The intra-State transmission system as a general rule shall be capable of withstanding and be secured against the following contingency outages without necessitating load shedding or rescheduling of generation during Steady State Operation.—
 - (i) Outage of a 110 kV/132 kV D/C line or,
 - (ii) Outage of a 220 kV D/C line or,
 - (iii) Outage of a 400 kV S/C line or
 - (iv) Outage of a single Interconnecting Transformer or,
 - (v) Outage of a one pole of HVDC Bipole line or
 - (vi) Outage of a 765 kV S/C line

Provided that the above contingencies shall be considered assuming a pre-contingency system de-rating, planned outage of another 110 kV/132 kV D/C line or 220 kV D/C line or 400 kV S/C line in another corridor and not emanating from the same sub-station
- (3) All the Generating Units may operate within their reactive capability curves and the network voltage profile shall be maintained within voltage limits specified
- (4) The intra-State transmission system shall be capable of withstanding the loss of most severe single infeed without loss of stability
- (5) Any one of the events defined in the sub-Regulation (2) above shall not cause
 - (i) Loss of supply
 - ii Prolonged operation of the system frequency below and above specified limits
 - (ii) Unacceptable high or low voltage
 - (iv) System instability
 - (v) Unacceptable overloading of IaSTS elements
- (6) In all sub-stations (66 kV/110 kV/132 kV and above, except HVDC) suitable number (at least two, and capacity of transformers shall be provided to have adequate redundancy required to maintain firm capacity at the sub-station. In HVDC sub-stations, at least one spare converter/inverter transformer shall be kept ready to use at any time

Explanation for the purpose of this Regulation the term firm capacity shall mean the minimum transformation capacity available at the substation in case of outage of any one transformer.

- (7) State Transmission Utility shall carry out planning studies for Reactive Power compensation of IaSTS including reactive power compensation at the in State Generating Station's switchyard

2.6 Planning Data—

Transmission Licensees and Users are to supply following types of data to the State Transmission Utility for purpose of developing the transmission plan

- (i) Standard Planning Data;
- (ii) Detailed Planning Data

2.6.1 Standard Planning Data—

- 1 Standard Planning Data shall consist of details which are expected to be normally sufficient for the State Transmission Utility to investigate the impact on the IaSTS due to User/Transmission Licensee development.
- 2 State Transmission licensees and Users shall provide the following standard planning data to the State Transmission Utility from time to time in the standard formats provided by State Transmission Utility
 - (i) Preliminary project planning data;
 - (ii) Committed project planning data; and
 - (iii) Connected planning data

Provided that the State Transmission Utility shall provide a date and periodically, not more than a year, for submission of information in the said formats after providing reasonable time to Transmission Licensees and Users

Provided that the State Transmission Utility shall develop standard formats for submission of above mentioned data within one (1) month from notification of these regulations and make the same available on its Internet website and to any interested person

Provided also that the State Transmission Utility shall be guided by the formats developed for submission of above mentioned data under the provisions of Grid Code specified by Central Commission under clause (h) of sub-section (1) of section 79 of the Electricity Act 2003

2.6.2 Detailed Planning Data—

- 1 Detailed Planning Data shall consist of additional more detailed data not normally expected to be required by State Transmission Utility to assess the impact of User/Transmission Licensee development on the IaSTS
- 2 Detailed Planning Data shall be furnished by the Users and Transmission Licensees as and when requested by the State Transmission Utility

2.7 Implementation of Transmission Plan—

The actual program of implementation of transmission lines inter connecting Transformers, reactors, capacitors and other transmission elements will be determined by STU in consultation with the concerned agencies. The completion of these works, in the required time frame shall be ensured by STU through the concerned agency

CHAPTER 3—CONNECTION CONDITIONS

3.1 Introduction—

The Connection Conditions specify the minimum technical and design criteria which shall be complied with by STU and any User/Transmission Licensee connected to or seeking connection to IaSTS. They also set out the procedures by which STU shall ensure compliance by any agency with the above criteria as pre-requisite for the establishment of an agreed connection

3.2 Objective--

The Connection Conditions are designed to ensure that

- i) The basic rules for connections are complied with and also to treat all agencies in a non-discriminatory manner
- ii) Any new or modified connections when established shall neither suffer unacceptable effects due to its connections to IaSTS nor impose unacceptable effects on the system of any other connected agency
- iii) The ownership and responsibility for all the equipments shall be clearly specified in a schedule, site responsibility schedule for every site where a connection is made

3.3 Scope--

The Connection Conditions apply to all State Constituents ,STL , aSGS etc , and any other agency licensees connected to and involved in developing the IaSTS . This Connection Code also applies to all agencies which are planning to generate, transmit and/or are generating/transmitting energy to/from IaSTS . The Connection conditions for Generating Units embedded in the Distribution systems and not connected to the IaSTS shall be finalized by the respective Distribution Licensees

3.4 Connection Standard--

The applicable technical standards for construction of electrical plants, electric lines and connectivity to the IaSTS shall be as per the Regulations notified by the Authority under clause (b) of section 73 of the Electricity Act 2003

Provided that the prevailing guidelines of the Authority shall be considered until the Regulations are notified under clause (b) of Section 73 of the Act by the Authority

3.5 Safety Standard--

The applicable safety requirements for construction, operation and maintenance of electrical plants and electric lines shall be as per the Regulations notified by the Authority under clause (c) of Section 73 of the Act

Provided that Indian Electricity Rules, 1956 and the prevailing guidelines of the Authority shall be considered until the Regulations are notified under clause (c) of section 73 of the Act by the Authority

3.6 Procedure for connection--

1. Prior to an agency being connected to the IaSTS , all necessary conditions outlined in the SGC in addition to other mutually agreed requirements to be complied with must be fulfilled by the agency
2. Application for establishing new arrangement or modifying existing arrangement of connection to and/or use of the IaSTS shall be submitted by the concerned Transmission Licensee or User to the State Transmission Utility .

Provided that the standard format for application mentioned in this Regulation shall be developed by State Transmission Utility and shall be made available at its internet website within two (2) months of notification of these Regulations

3. The application mentioned in sub-regulation (2) above shall be submitted along with the following details—
 - (i) Report stating the purpose of the proposed connection and/or modification, transmission licensee to whose system connection is proposed, connection point, description of apparatus to be connected or modification of the apparatus already connected and beneficiaries of the proposed connection, .
 - (ii) Construction schedule and target completion date; and
 - (iii) Confirmation that the Transmission Licensee or the User shall abide by the provisions of State Grid Code, Indian Electricity Rules and various standards including Grid Connectivity Standards made pursuant to the Act.

4. The State Transmission Utility shall forward a copy of the application to the Transmission Licensee in whose system the connection is being sought, to State Load Despatch Centre and to every Transmission Licensee within the State whose Transmission System is likely to be affected by such application

- (5) The State Transmission Utility or Transmission Licensee in whose system the connection is being sought, may carry out the power system studies as considered appropriate before allowing any new connection.
- (6) The State Transmission Utility shall within Thirty (30) days from the receipt of an application under sub-Regulation (2), and after considering all suggestions and comments received from the parties identified under sub-regulation (4)
- (i) accept the application with such modification or such conditions as may be specified by the State Transmission Utility,
 - (ii) Reject the application for reasons to be recorded in writing if such application is not in accordance with the provisions of these Regulations
- (7) In case of acceptance of an application as per clause (a) of sub-regulation (2) the State Transmission Utility shall make a formal offer to the applicant
 Provided that the State Transmission Utility shall forward a copy of the offer to the Appropriate Transmission Licensee
- (8) The voltage level at which the applicant is offered to be connected to the IaSTS shall be governed by the standards not fixed by the Authority and prevailing guidelines adopted by the State Transmission Utility
- (9) The State Transmission Utility shall upon compliance of the required conditions by the concerned Transmission Licensee/User shall notify the concerned Transmission Licensee/User that it can be connected to the IaSTS
- (10) The applicant and the Appropriate Transmission Licensee in whose system the connection is being sought shall finalise a Connection Agreement on acceptance of the offer by the applicant
 Provided that the State Transmission Utility shall be provided with a copy of the Connection Agreement by the Appropriate Transmission Licensee
 Provided further the State Load Despatch Centre shall also be provided with a copy of the above mentioned Connection Agreement by the Appropriate Transmission Licensee
- (11) In case of the existing connections between IaSTS network and State Constituents/IaSGS a relaxation of one year in respect of the connection conditions is allowed so that the present arrangements may continue. The process of re-negotiation of the connection conditions with IaSGS/State constituents should be completed within a period of one year. In case it is determined that the compliance of connection conditions would be delayed further the Commission may consider further relaxation for which a petition will have to be filed by the concerned constituent along with STU's recommendation/comments. The cost of modification, if any shall be borne by the concerned Constituent

3.7 Connection Agreement--

- (1) Connection Agreement shall include as appropriate within its terms and conditions the following information relating to the connection of the User or Transmission Licensee to the IaSTS
- (i) a condition requiring both parties to comply with the State Grid Code
 - (ii) details of connection technical requirements and commercial arrangements
 - (iii) details of any capital expenditure arising from necessary reinforcement or extension of the system data communication etc and demarcation of the same between the concerned parties,
 - (iv) Site Responsibility Schedule,
 - (v) General philosophy and guidelines on protection and telemetry,
 - (vi) Protection systems,
 - (vii) System recording instruments
 - (viii) Communication facilities, and

- (x) Any other information considered appropriate by the State Transmission Utility or the Commission
- (2) State Transmission Utility shall develop a Model Connection Agreement within two (2) months and submit to the Commission for approval

3.8 Grid Parameter Variations—

3.8.1 General—

Transmission Licensees and Users shall ensure that Plant and Apparatus requiring service from or providing service to the aSTS is of such design and construction that satisfactory operation of such Plant and Apparatus will not be prevented by variation in instantaneous values of system frequency and voltage from their nominal values and that such Plant and Apparatus shall not induce any adverse effect on the aSTS.

3.8.2 Frequency Variation—

Rated frequency of the system shall be 50.0 Hz and shall normally be controlled within the limits as per regulations specified by the Authority.

3.8.3 Voltage Variation—

- 1 The variations of voltage may not be more than the voltage range specified in the regulations framed by the Authority.
- 2 The agency engaged in sub-transmission and distribution shall not depend upon the IaSTS for reactive support when connected. The agency shall estimate and provide the required reactive compensation in its transmission and distribution network to meet its full Reactive Power requirement unless specifically agreed to with STU.

3.9 Equipment at Connection Points—

3.9.1 Sub-station Equipment—

- 1 All Extra High Voltage (EHV) sub-station equipments shall comply with standards prescribed by Bureau of Indian Standards/ International Electro-technical Commission, prevailing Code of practice.
- 2 All equipment shall be designed, manufactured, tested and certified in accordance with the quality assurance requirements as per the standards of International Electro-technical Commission or the Bureau of Indian Standards.
- 3 Each connection between a User and aSTS shall be controlled by a circuit breaker capable of interrupting at the connection point, at least the short circuit current as advised by State Transmission Utility in the specific Connection Agreement.

3.9.2 Fault Clearance Times—

- 1 The fault clearance time for primary protection schemes, when all equipments operate correctly for a three phase fault close to the bus-bars on users equipment directly connected to IaSTS and for a three phase fault close to the bus-bars on IaSTS connected to users equipment, shall not be more than
 - (i) 100 milliseconds for 800 kV class & 400 kV
 - (ii) 160 milliseconds for 220 kV & 132 kV/110 kV
- 2 Back up protection shall be provided for required isolation protection in the event of failure of the primary protection systems provided to meet the above fault clearance time requirements. If a Generating Unit is connected to the aSTS directly, it shall be capable of withstanding the fault and clearing of the fault by back-up protection on the IaSTS side.

3.9.3 Protection—

- 1 Protection Systems shall be provided by all Transmission Licensees and Users connected to aSTS in co-ordination with STU to isolate the faulty equipments and protect the other components against all types of faults internal, external to them, within specified fault clearance time with reliability, selectivity and sensitivity.

Provided that all Users or Transmission Licensees connected to IaSTS shall provide protection systems as specified in the Connection Agreement.

- 2) Relay setting co-ordination shall be done at regional level by Regional Power Committee

3.10 Generating Units and Power Stations--

- (1) A Generating Unit shall be capable of continuously supplying its normal rated active/reactive output within the system frequency and voltage variation range indicated at Regulation 3.8 above subject to the design limitations specified by the manufacturer
- (2) A generating unit shall be provided with an AVR protective and safety devices as set out in Connection Agreements
- (3) Each Generating Unit shall be fitted with a turbine speed governor having an overall droop characteristic within the range of 3% to 6% which shall always be in service
- (4) Each Generating Unit shall be capable of instantaneously increasing output by 5% when the frequency falls (unit to 105% MCR Ramping back to the previous MW level in case the increased output level can not be sustained) shall not be faster than 1% per minute

3.11 Reactive Power Compensation--

- 1) Reactive Power compensation and/or other facilities shall be provided by Users as far as possible in the low voltage systems close to the load points thereby avoiding the need for exchange of Reactive Power to from the IaSTS and to maintain the IaSTS voltage within the specified range
- 2) Line Reactors may be provided to control temporary over voltage within the units as set out in connection agreements
- 3) The additional reactive compensation to be provided by the User shall be indicated by Transmission Licensee in the Connection Agreement for implementation

3.12 Data and Communication Facilities--

Reliable and efficient speech and data communication systems shall be provided to facilitate necessary communication and data exchange and supervision control of the grid by the S. DC under normal and abnormal conditions. All agencies shall provide Systems to telemeter power system parameter such as flow, voltage and status of switches, transformer taps etc. in line with interface requirements and other guidelines made available to S. DC. The associated communication system to facilitate data flow up to S. DC as the case may be, shall also be established by the concerned agency as specified by STU in connection agreement. All agencies in coordination with STJ shall provide the required facilities at their respective ends and S. DC as specified in the Connection Agreement.

3.13 System Recording Instruments--

- 1) Recording instruments such as Data Acquisition System, Disturbance Recorder, Event Logger/Fault Locator (including time synchronization equipment) shall be provided in the IaSTS for recording of dynamic performance of the system
- 2) All Users and Transmission Licensees shall provide all the requisite recording instruments as specified in the Connection Agreement in accordance with the agreed time schedule

3.14 Responsibilities for operational safety--

Transmission Licensees and the Users shall be responsible for safety as indicated in Site Responsibility Schedules for each connection point.

3.15 Site Responsibility Schedule--

- 1) Site Responsibility Schedule shall be produced by the concerned Transmission Licensee and the User detailing the ownership responsibilities of each before execution of the project or connection including safety responsibilities
- 2) The Site Responsibility Schedule shall be developed by the concerned Transmission Licensee pursuant to the relevant Connection Agreement and shall state the following for each item of plant and apparatus installed at the Connection point

- (i) Ownership of the Plant/Apparatus,
 - (ii) Responsibility for control of the Plant/Apparatus,
 - (iii) Responsibility for operation of the Plant/Apparatus;
 - (iv) Responsibility for maintenance of the Plant/Apparatus; and
 - (v) Responsibility for all matters relating to safety of any person at the connection point
- (3) The format principles and basic procedure to be used in the preparation of Site Responsibility Schedules shall be formulated by State Transmission Utility within three (3) months of not later than the date of these regulations and shall be provided to each User and Transmission Licensee for compliance.
- Provided that the State Transmission Utility shall put up the information related to above mentioned format principles and procedures on its Internet Website.
- (4) All agencies connected to or planning to connect to IaSTS would ensure providing of RTU and other communication equipment as specified by SLDC for sending real time data to SLDC at least before date of commercial operation of the generating stations or sub-station line being connected to IaSTS.

3.16 Single Line Diagrams--

- 1 Single Line Diagram shall be furnished for each connection point by the connected User or Transmission Licensee to the State Transmission Utility.
- Provided that the Transmission licensee shall also furnish the above information to the State Load Despatch Centre.
- 2 Single Line Diagram shall include all High Tension (HT) connected equipment and the connections to all external circuits and incorporate numbering nomenclature and labeling etc. The diagram is intended to provide an accurate record of the layout and circuit connections, rating, numbering and nomenclature of HV apparatus and related plant.
 - 3 In the event of a proposal to change any equipment, the concerned User or Transmission Licensee shall make the necessary changes to State Transmission Utility and to all concerned. When the changes are implemented, Single Line Diagram shall be updated appropriately by the concerned Users or Transmission Licensee and a copy of the same shall be provided to the State Transmission Utility and SLDC.

3.17 Site Common Drawings--

- 1 Site Common Drawings shall be prepared for each Connection Point and will include the following information ~
 - (i) Site Layout,
 - (ii) Electrical Layout,
 - (iii) Details of Protection/Control; and
 - (iv) Common Services Drawings
- Necessary details shall be provided by the agencies to STU.

- 2 Detailed drawings shall be prepared by Transmission Licensee and User in respect of their system/facility at each Connection Point and copies of the same shall be made available to concerned User and Transmission Licensee respectively.
- 3 In case of any change in the Site Common Drawings that is found necessary by Transmission Licensee or User in respect of their system/facility at the Connection Point, the details of such change shall be furnished to the other party as soon as possible.

3.18 Procedure for Site Access, Site operational activities and Maintenance Standards--

- The Connection Agreement will also indicate any procedure necessary for Site access, Site operational activities and maintenance standard for equipment of the STU, transmission licensee at IaSGS/licensee/User premises and vice versa.

- (2) The Transmission Licensee or User owning the Connection Site shall provide reasonable access and other required facilities to another Transmission Licensee or User whose equipment is proposed to be installed, installed at the Connection Site for installation, operation, maintenance, etc.
- (3) Written procedures and agreements shall be developed between Transmission Licensees and Users to ensure that mandatory access is available to the concerned Transmission Licensee or User at the same time safeguarding the interests of Transmission Licensee and User at the connection site.

3.19 International Connections to IaSTS—

The procedure for International Connection to IaSTS and the execution of agreement for the same shall be done by STU in consultation with Authority and Ministry of Power (MOP).

3.20 Schedule of assets of State Grid—

STU shall submit annually to the Commission by 30th September each year a schedule of transmission assets which constitute the State Grid as on 31st March of that year indicating ownership on which SLDC has operational control and responsibility.

CHAPTER 4—OPERATING CODE

4.1 Objective—

The primary objective of integrated operation of the State Grid is to enhance the overall operational economy and reliability of the entire electric power network spread over the geographical area of the entire State.

4.1.1 Operating Policy--

1. Participant Utilities shall cooperate with each other and adopt Good Utility Practice at all times for satisfactory and beneficial operation of the State grid.
2. Overall operation of the State Grid shall be supervised from the State Load Despatch Centre (SLDC). The roles of SLDC shall be in accordance with the provisions of the Act.
3. A State constituent shall comply with this Operating Code for deriving maximum benefits from the integrated operation and for equitable sharing of obligations.
4. State Load Despatch Centre shall develop document and maintain a set of detailed internal operating procedures for managing the State Grid. These internal operating procedures shall include the following:
 - (i) Black start procedures
 - (ii) Load shedding procedures
 - (iii) Islanding procedures, and
 - (iv) Any other procedures considered appropriate by the State Load Despatch Centre.

Provided that such procedures shall be developed in consultation with State Constituents and shall be consistent with SLDC to enable compliance with the requirement of this SGC.

Provided further that such procedures shall be submitted within three (3) months to the Commission for approval.

5. The control rooms of the State Load Despatch Centre including Area Load Despatch Centres, Power Plants, substations of 132 kV and above and any other control centres of Transmission Licensees and Users shall be manned round the clock by qualified and adequately trained personnel.

4.2 System Security Aspects—

1. All State Constituents shall endeavor to operate their respective power systems and power stations in synchronization with each other at all times such that the entire system within the State operates as one synchronized system.

- (2) No part of the State Grid shall be deliberately isolated from the rest of the State Grid except under an emergency and conditions in which such isolation would prevent a total grid collapse and, or would enable early restoration of power supply, (i), when serious damage to a costly equipment is imminent and such isolation would prevent it and, (ii) when such isolation is specifically instructed by SLDC. Complete synchronization of grid shall be restored as soon as the conditions again permit. The restoration process shall be supervised by SLDC as per operating procedures separately formulated.
- (3) No important element of the State Grid shall be deliberately opened or removed from service at any time except when specifically instructed by SLDC or with specific and prior clearance of SLDC. The list of such important grid elements on which the above stipulations apply shall be prepared by the SLDC in consultation with the constituents and be available at SLDC. In case of opening/removal of any important element of the grid under an emergency situation, the same shall be communicated to SLDC at the earliest possible time after the event.
- (4) Any tripping - whether manual or automatic - of any of the above elements of State Grid shall be precisely intimated by the concerned Area LDC/agency to SLDC as soon as possible, say within ten minutes of the event. The reason, to the extent determined, and the likely time of restoration shall also be intimated. All reasonable attempts shall be made for the elements restoration as soon as possible.
- (5) All generating units of more than 500 MW capacity which are synchronized with the grid irrespective of their ownership type and size shall have their governors in normal operation at all times. If any generating unit of over fifty (50) MW size is required to be operated without its governor in normal operation, the SLDC shall be immediately advised about the reason and duration of such operation. A governor shall have a droop of between 3% and 5%.
- (6) Facilities available within load limiters (Automatic Turbine Run-up System (ATRS), Turbine supervisory control, coordinated control system etc.) shall not be used to suppress the normal governor action in any manner. No dead bands and/or time delays shall be deliberately introduced.
- (7) All Generating Units operating at or up to 100% of their Maximum Continuous Rating (MCR) shall normally be capable of, and shall not in any way be prevented from, instantaneously picking up five per cent (5%) extra load when frequency falls due to a system contingency. The generating units operating at above 100% of their MCR shall be capable of, and shall not be prevented from, going at least up to 105% of their MCR when frequency falls suddenly. After an increase in generation as above, a generating unit may ramp back to the original level at a rate of about one percent (+1%), per minute. In case continued operation at the increased level is not sustainable, any generating unit of over fifty (50) MW size not complying with the above requirements shall be kept in operation synchronized with the State Grid only after obtaining the permission of SLDC. However, a constituent can make up the corresponding short fall in spinning reserve by maintaining an extra spinning reserve on the other generating units of the constituent.
- (8) The recommended rate for changing the governor setting, i.e., supplementary control for increasing or decreasing the output/generation level for all generating units irrespective of their type and size would be one (1) per cent per minute or as per manufacturer's limits. However, if frequency falls below 49.5 Hz, a partly loaded generating units shall pick up additional load at a faster rate according to their capability.
- (9) Except under an emergency or to prevent an imminent damage to a costly equipment, no constituent shall suddenly reduce his generating unit output by more than one hundred (100) MW without prior intimation to and consent of the SLDC, particularly when frequency is falling or is below 49.0 Hz. Similarly, no constituent shall cause a sudden increase in its load by more than one hundred (100) MW without prior intimation to and consent of the SLDC.
- (10) All generating units shall normally have their automatic voltage regulators (AVRs) in operation, with appropriate settings. In particular, if a generating unit of over fifty (50) MW size is required to be operated without its AVR in service, the SLDC shall be immediately intimated about the reason and duration and its permission obtained. Power System Stabilizers (PSS) in AVRs of generating units

wherever provided, shall be got properly tuned by the respective generating unit owner as per a plan prepared for the purpose by the STU from time to time. STU will be allowed to carry out checking of PSS and further tuning it wherever considered necessary.

- (11) Provision of protections and relay settings shall be coordinated periodically throughout the State Grid as per a plan to be separately finalized by the Protection Committee of the RPC.
- (12) All State constituents shall make all possible efforts to ensure that the grid frequency always remains within the 49.0 – 50.5 Hz band, the frequency range within which steam turbines conforming to the IEC specifications can safely operate continuously.
- (13) Users and Transmission Licensees shall provide automatic under frequency and df/dt relay-based load shedding, islanding schemes in their respective systems wherever applicable to arrest frequency decline that could result in a collapse/disintegration of the State grid as per the plan separately finalized by the RPC and shall ensure its effective application to prevent cascade tripping of generating units in case of any contingency.
- (14) Users and Transmission Licensees shall ensure that the under frequency and df/dt relay-based load shedding/islanding schemes mentioned in sub-regulation 13, are always functional.

Provided that the relays may be temporarily kept out of service in extreme contingencies with prior consent of State Load Despatch Centre.

- (15) State Transmission Utility shall carry out periodic inspection of the under frequency relays and produce the report to State Load Despatch Centre. State Load Despatch Centre shall maintain the record of under frequency relay and/or df/dt relay operation.
- (16) All State Constituents shall also facilitate identification, installation and commissioning of System Protection Schemes (including inter-tripping and run-back) in the power system to protect against situations such as voltage collapse and cascading. Such schemes would be finalized by the STU and shall be kept in service. SLDC shall be promptly informed in case any of these are taken out of service.
- (17) Procedures shall be developed to recover from partial/total collapse of the grid and periodically updated in accordance with the requirements given under Regulation 4.8. These procedures shall be followed by all the State Constituents to ensure consistent, reliable and quick restoration.
- (18) Each State Constituent shall provide adequate and reliable communication facility internally and with other Constituents, SLDC to ensure exchange of data/information necessary to maintain reliability and security of the grid. Wherever possible, redundancy and alternate path shall be maintained for communication along important routes e.g. ALDC to SLDC.
- (19) The State Constituents shall send information/data including disturbance recorder/sequential event recorder output etc. to SLDC for purpose of analysis of any grid disturbance event. No State constituent shall block any data/information required by the SLDC for maintaining reliability and security of the grid and for analysis of an event.
- (20) All State Constituents shall make all possible efforts to ensure that the grid voltage always remains within the following operating range.

VOLTAGE – (kV RMS)		
Nominal	Maximum	Minimum
400	420	380
220	245	200
132	145	120
66	73	60

4.3 Demand Estimation for Operational Purposes—

4.3.1 Introduction—

- (1) This part describes the procedures/responsibilities of the SLDCs for demand estimation for both Active Power and Reactive Power
- (2) The demand estimation is to be done on daily/weekly/monthly basis for current year
- (3) SLDC shall carry out its own demand estimation from the historical data and weather forecast data from time to time
- (4) While the demand estimation for operational purposes is to be done on a daily/weekly/monthly basis, daily mechanisms and facilities at SLDC shall be created at the earliest to facilitate on-line estimation for daily operational use

4.3.2 Objective—

- (1) The objective of this procedure is to enable the SLDC to estimate demand over a particular period
- (2) The demand estimates are to enable the SLDC to conduct system studies for operational planning purposes

4.3.3 Procedure—

- (1) SLDC shall develop methodologies/mechanisms for daily/ weekly/monthly/yearly demand estimation (MW, MVA and MWh), for operational purposes and set out the responsibilities of State Constituents for the same. It shall also provide for procedures as well as timelines to be followed for exchange of information between the concerned entities for arriving at these estimates
- (2) The data for the estimation shall also include load shedding, power cuts etc. SLDC shall also maintain historical database for demand estimation

4.4 Demand Management—

4.4.1 Introduction—

This part is concerned with the provisions to be made by SLDC to effect a reduction of demand in the event of insufficient generating capacity and transfers from external interconnections being not available to meet demand or in the event of breakdown or operating problems (such as frequency/voltage levels or thermal overloads) on any part of the grid.

4.4.2 Manual Demand Disconnection—

- (1) The State Constituents shall endeavour to restrict their net drawal from the grid to within the respective drawal schedules whenever the system frequency is below 49.5 Hz. When the frequency falls below 49.0 Hz, requisite load shedding (manual) shall be carried out in the concerned Area. User to curtail the over-drawal
- (2) In case of certain contingencies and/or threat to system security, the SLDC may direct a User to decrease its drawal by a certain quantum. Such directions shall immediately be acted upon
- (3) Each State Constituent shall make arrangements that will enable manual demand disconnection to take place as instructed by the SLDC under normal and/or contingent conditions
- (4) The measures taken to reduce the Constituents drawal from the grid shall not be withdrawn as long as the frequency/voltage remains at a low level unless specifically permitted by the SLDC

4.5 Periodic Reports—

4.5.1 Weekly Report—

A weekly report shall be issued by SLDC to all Constituents of the State and shall cover the performance of the State Grid for the previous week. Such weekly report shall also be available on the website of the SLDC for at least 12 weeks. The weekly report shall contain the following—

- (i) Frequency profile
- (ii) Voltage profile of selected substations

- (iii) Demand and Supply Situation,
- (iv) Major Generation and Transmission Outages,
- (v) Transmission Constraints, and
- (vi) Instances of persistent/significant non-compliance of SGC

4.5.2 Other Reports—

1. The SLDC shall prepare a quarterly report which shall bring out the system constraints, reasons for not meeting the requirements, if any of security standards and quality of service along with details of various actions taken by different agencies and the agencies responsible for causing the constraints
- (2) The SLDC shall also provide information report which can be called for by STUs in the interest of smooth operation of IaSTS

4.6 Operational Liaison—

4.6.1 Introduction—

- 1 This part sets out the requirements for the exchange of information in relation to Operations and/or Events on the total grid system which have had or will have an effect on
 - (i) The State Grid
 - (ii) The IaSTS in the State;
 - (iii) The system of a State Constituent
- (2) The above generally relates to notifying of what is expected to happen or what has happened and not the reasons why
- 3) The Operational liaison function is a mandatory built-in hierarchical function of the SLDC and State Constituents to facilitate quick transfer of information to operational staff. It will correlate the required inputs for optimization of decision making and actions

4.6.2 Procedure for Operational Liaison—

(1) Operations and events on the State Grid

- a. Before any operation is carried out on State Grid, the SLDC will inform each State Constituent whose system may or will experience an operational effect and give details of the operation to be carried out
- b) Immediately following an event on State Grid, the SLDC will inform each State Constituent whose system may or will experience an operational effect following the event and give details of what has happened in the event but not the reasons why

(2) Operations and events on a Constituent's system

- a Before any operation is carried out on a constituent's system, the constituent will inform the SLDC in case the State Grid may or will experience an operational effect and give details of the operation to be carried out
- b) Immediately following an event on a constituent's system, the constituent will inform the SLDC in case the State Grid may or will experience an operational effect following the event and give details of what has happened in the event but not the reasons why

4.7 Outage Planning—

4.7.1 Introduction—

- 1 This part sets out the procedure for preparing outage schedules for the elements of the State Grid in a co-ordinated and optimal manner keeping in view the State system operating conditions and the balance of generation and demand. Schedules of elements of grid covered under these stipulations shall be prepared and be available with SLDC and ALDCs.

- (2) The generation output and transmission system should be adequate after taking into account the outages to achieve the security standards
- (3) Annual outage plan shall be prepared in advance for the financial year by the S.LDC and reviewed during the year on Quarterly and Monthly basis

4.7.2 Objective—

- (1) The objective of this part is
 - (a) To produce a coordinated generation outage programme for the State Grid considering all the available resources and taking into account transmission constraints as well as irrigation requirements
 - (b) To minimise surpluses or deficits if any in the system requirement of power and energy and help operate system within Security Standards
 - (c) To optimise the transmission outages of the elements of the State Grid without adversely affecting the grid operation but taking into account the Generation Outage Schedule outages of STU/Transmission Licensee/User systems and maintaining system security standards

4.7.3 Scope—

This part is applicable to all State Constituents including S.LDC, ALDCs, Transmission Licensees, Users, IaSGS and STU.

4.7.4 Outage Planning Process—

1. The S.LDC shall be responsible for analyzing the outage schedule given by all State Constituents preparing a draft annual outage schedule and finalization of the annual outage plan for the following financial year by 15th February of each year
- (2) A Transmission Licensees/Users, IaSGS and STU shall provide S.LDC with their proposed outage programmes in writing for the next financial year by 31st October of each year. These shall contain identification of each generating unit, new CT, the preferred date for each outage and its duration and where there is flexibility the earliest start date and latest finishing date
3. S.LDC shall then come out with a draft outage programme for the next financial year by 15th January of each year for the State Grid taking into account the draft outage plan for the State given by RPC Secretariat, the available resources in an optimal manner and to maintain security standards. This will be done after carrying out necessary system studies and if necessary the outage programmes shall be rescheduled. Adequate balance between generation and load requirement shall be ensured while finalising outage programmes
4. The final outage plan shall be intimated to all State constituents for implementation latest by 15th February of each year after considering the final outage plan for the State prepared by the RPC Secretariat
5. The above annual outage plan shall be reviewed by S.LDC on quarterly and monthly basis in coordination with all parties concerned and adjustments made wherever found to be necessary
6. In case of emergency in the system viz. loss of generation, breakdown of transmission line affecting the system, grid disturbances, system isolation, S.LDC may conduct studies again before clearance of the planned outage

S.LDC is authorized to defer the planned outage in case of any of the following taking into account the statutory requirements

- (i) Major grid disturbances (total black-out in State)
- (ii) System isolation
- (iii) Black-out in a Constituent System;
- (iv) Any other event in the system that may have an adverse impact on the system security by the proposed outage

Provided that the State Load Despatch Centre shall inform the concerned State constituents about the revised outage plan with appropriate reasons for revisions in the outage plan as soon as possible.

- (8) The detailed generation and transmission outage programmes shall be based on the latest annual outage plan (with all adjustments made to date)
- (9) Each State Constituent shall obtain the final approval from SLDC prior to availing an outage

4.8 Recovery Procedures—

- 1) Detailed plans and procedures for restoration of the State Grid under partial/total blackout shall be developed by SLDC in consultation with all State Constituents and shall be reviewed/updated annually
- 2) Detailed plans and procedures for restoration after partial/total blackout of each Constituent's system within the State will be finalized by the concerned Constituent in co-ordination with the SLDC. The procedure will be reviewed, confirmed and/or revised once every subsequent year. Mock trial runs of the procedure for different sub-systems shall be carried out by the Constituents at least once every six months under intimation to the SLDC
- 3) List of generating stations with back start facility inter-State, inter-regionalties, synchronizing points and essential loads to be restored on priority shall be prepared by and be available with SLDC
- 4) The SLDC is authorized during the restoration process following a black out to operate with reduced security standards for voltage and frequency as necessary in order to achieve the fastest possible recovery of the grid
- 5) All communication channels required for restoration process shall be used for operational communication only till grid normalcy is restored

4.9 Event Information—

4.9.1 Introduction—

This part deals with reporting procedures in writing of reportable events in the system to all State Constituents and SLDC/ALDCs.

4.9.2 Objective—

The objective of this part is to define the incidents to be reported, the reporting route to be followed and information to be supplied to ensure consistent approach to the reporting of incidents/events.

4.9.3 Scope—

This part covers all State Constituents, SLDC and ALDCs.

4.9.4 Responsibility—

- 1) The SLDC, ALDCs shall be responsible for reporting events to the State Constituents/SLDC
- 2) All State Constituents and the ALDCs shall be responsible for collection and reporting of all necessary data to SLDC for monitoring, reporting and event analysis.

4.9.5 Reportable Events—

Any of the following events require reporting by SLDC/State Constituent—

- (i) Violation of security standards.
- (ii) Grid discipline,
- (iii) Non-compliance of SLDC's instructions
- (iv) System islanding/system split
- (v) State black-out/partial system black out;
- (vi) Protection failure on any element of IaSTS

- (vi) Power system instability; and
- (vii) Tripping of any element of the State grid.

4.9.6 Reporting Procedure—

- (1) Written reporting of Events by State Constituents to SLDC
 - in the case of an event which was initially reported by a State Constituent or an ALDC to SLDC orally the Constituent/ALDC will give a written report to SLDC in accordance with this part
- (2) Written Reporting of Events by SLDC to State Constituents
 - in the case of an event which was initially reported by SLDC to a Constituent/ALDC orally the SLDC will give a written weekly report to the Constituent/ALDC in accordance with this part
- (3) Form of Written Reports

A written report shall be sent to SLDC or a State Constituent/ALDC as the case may be and will confirm the oral notification together with the following details of the event -

 - (i) Time and date of event,
 - (ii) Location,
 - (iii) Plant and/or Equipment directly involved,
 - (iv) Description and cause of event,
 - (v) Antecedent conditions,
 - (vi) Demand and/or Generation (in MW) interrupted and duration of interruption
 - (vii) All Relevant system data including copies of records of all recording instruments including Disturbance Recorder Event Logger, DAS etc
 - (viii) Sequence of trippings with time,
 - (ix) Details of Relay Flags, and
 - (x) Remedial measures
- (4) Events affecting a generation capacity or a load of more than 1000 MW shall immediately be reported in writing to the Commission by the State Load Despatch Centre, Transmission Licensee or User as the case may be

Provided that a summary document including brief detail of the event, extent and probable causes of the event shall be sent across to the Commission within 24 hours of occurrence of such event

CHAPTER 5—SCHEDULING AND DESPATCH CODE

5.1 Introduction--

This Chapter sets out the--

- (i) demarcation of responsibilities between various State Constituents and SLDC in scheduling and despatch,
- (ii) the procedure for scheduling and despatch,
- (iii) the reactive power and voltage control mechanism,
- (iv) complementary commercial mechanisms (in the Annexure-1) which shall be applicable w.e.f such date as may be decided by Commission for introduction of intra-State ABT

5.2 Objective--

This code deals with the procedures to be adopted for scheduling of the intra-State generating stations IaSGS and net drawals of concerned Constituents on a daily basis with the modality of the flow of information between the IaSGS/SLDC/beneficiaries of the State. The procedure for submission of capability declaration by each IaSGS and submission of drawal schedule by each beneficiary is intended to enable SLDC to prepare the despatch schedule for each IaSGS and drawal schedule for each beneficiary. It also provides methodology of

issuing real time dispatch drawal instructions and rescheduling if required to aSGS and beneficiaries along with the commercial arrangement for the deviations from schedules as well as mechanism for reactive power pricing. The provisions contained in this Chapter are without prejudice to the powers conferred on SUC under section 30 and 31 of the Electricity Act, 2003.

5.3 Scope--

This Code will be applicable to SUC/ALDCs, IaSGS, Transmission licensees/STU and other beneficiaries in the State Grid.

5.4 Demarcation of responsibilities--

- (1) The State Grid shall be operated as loose power pool with decentralized scheduling and dispatch in which the Users shall have full operational autonomy and Users through their concerned ALDCs shall have the total responsibility for-
 - (i) scheduling, dispatching their own generation including generation of their embedded licensees),
 - (ii) regulating the demand of their customers,
 - (iii) scheduling their drawal from the IaSGS (within their share in the respective plant's expected capability)
 - (iv) arranging any bilateral interchanges, and
 - (v) regulating their net drawal from the State Grid as per following guidelines
- (2) The system of each beneficiary shall be treated and operated as a notiona control area. The algebraic summation of scheduled drawal from InSG, ISGS and any bilateral interchange shall provide the drawal schedule of each beneficiary and this shall be determined in advance on daily basis. While the beneficiaries would generally be expected to regulate their embedded generation and/or consumers load so as to maintain their actual drawal from the State Grid close to the above schedule, a tight control is not mandated. The beneficiaries may at their discretion deviate from the drawal schedule as long as such deviations do not cause system parameters to deteriorate beyond permissible limits and/or do not lead to unacceptable line loading.
- (3) The above flexibility has been proposed in view of the fact that all beneficiaries do not have a requisite facility for minute-to-minute on-line regulation of the actual net drawal from the State grid. Deviations from net drawal schedule are however to be appropriately priced through the Unscheduled Interchange (UI) mechanism, the pricing for which shall be applicable from the date the Commission introduces Intra-State ABT.
Provided that the beneficiaries through their concerned ALDCs shall always endeavour to restrict their net drawal from the grid to within their respective drawal schedules whenever the system frequency is below 49.5 Hz. When the frequency falls below 49.0 Hz, requisite load shedding shall be carried out in the concerned beneficiary(s) to curtail the over-drawal.
- (4) The SUC/STU shall regularly carry out the necessary exercises regarding short term and long term demand estimation for the State to enable them to plan in advance as to how they would meet their consumers load without overdrawing from the grid.
- (5) The IaSGS shall be responsible for power generation generally according to the daily schedules advised to them by the SUC on the basis of the requisitions received from the beneficiaries/ALDCs and for proper operation and maintenance of their generating stations such that these stations achieve the best possible long-term availability and economy.
- (6) While the IaSGS would normally be expected to generate power according to the daily schedules advised to them, it would not be mandatory to follow the schedules tightly. In case with the flexibility allowed to the beneficiaries, the IaSGS may also deviate from the given schedules depending on the plant and system conditions. In particular, they would be allowed encouraged to generate beyond the given schedule under deficit load days. Deviations from the ex- power plan generation schedules shall however be appropriately priced through the UI mechanism as and when Intra-State ABT is introduced by the Commission.

Provided that when the frequency is higher than 50.5 Hz, the actual net injection shall not exceed the scheduled dispatch for that time. Also, while the frequency is above 50.5 Hz, the aSGS may, at their discretion, back down without waiting for an advice from SLDC to restrict the frequency rise. When the frequency falls below 49.5 Hz, the generation at all aSGS (except those on peaking duty) shall be maximized, at least upto the level which can be sustained without waiting for an advice from SLDC.

- (7) Notwithstanding the above, the SLDC may direct the beneficiaries, ALDCs, aSGS to increase/decrease their drawal/generation in case of contingencies e.g. overloading of lines/transformers, abnormal voltages, threat to system security. Such directions shall immediately be acted upon in case the situation does not call for very urgent action and SLDC has some time for analysis. It shall be checked whether the situation has arisen due to deviations from schedules or due to any power flows pursuant to short term open access. These shall be got terminated first in the above sequence before an action which would affect the scheduled supplies from aSGS to the long term customers is initiated.
- (8) For all outages of generation and transmission system which may have an effect on the State Grid, all Constituents shall cooperate with each other and co-ordinate their actions through Grid Coordination Committee, GCC, for outages foreseen sufficiently in advance and through SLDC in all other cases, as per procedures finalized separately by GCC. In particular, outages requiring restriction of aSGS generation and/or restriction of aSGS/ISGS share which a beneficiary can receive (and which may have a commercial implication), shall be planned carefully to achieve the best optimization.
- (9) The State Constituents shall enter into separate joint/bilateral agreements to identify the beneficiary's shares in aSGS/ISGS projects based on the allocations by Appropriate Government/Commission where applicable, scheduled drawal pattern, tariffs, payment terms etc. All such agreements shall be filed with the SLDC for being considered in scheduling and State energy accounting. Any bilateral agreements between Constituents for scheduled interchanges on long term/short-term basis shall also specify the interchange schedule, which shall be duly filed in advance with the SLDC.
- (10) All Constituents should abide by the concept of frequency linked load dispatch and pricing of deviations, pricing to be applicable from the date of introduction of intra-State ABT, from schedule to unscheduled interchanges. All generating units of the constituents should normally be operated according to the standing frequency linked load dispatch guidelines issued by the SLDC to the extent possible, unless otherwise advised by the SLDC/ALDC.
- (11) It shall be incumbent upon the aSGS to declare the plant capabilities faithfully i.e. according to their best assessment. In case it is suspected that they have deliberately over declared the plant capability, contemplating to deviate from the schedules given on the basis of the capability declarations, and thus make money either as undue capacity charge or as the charge for deviations from schedule, the SLDC may ask the aSGS to explain the situation with necessary backup data.
- (12) The STJ shall install special energy meters on all inter connections between the State Constituents and other identified points for recording of actual net MWh interchanges and MVA/M drawals. The type of meters to be installed, metering scheme, metering capability testing and calibration requirements and the scheme for collection and dissemination of metered data shall be as per Regulations for Installation and Operation of Meters issued by the Authority under section 54(2)(d) of the Act. A concerned entity in whose premises the special energy meters are installed, shall fully co-operate with the STJ/SLDC and extend the necessary assistance by taking weekly meter readings and transmitting them to the SLDC.
- (13) The SLDC shall be responsible for computation of actual net MWh injection of each aSGS and actual net drawal of each beneficiary, 15 minute wise, based on the above meter readings and for preparation of the State Energy Accounts. All computations carried out by SLDC shall be open to all constituents for checking/verifications for a period of 15 days. In case any mismatch/omission is detected, the SLDC shall forthwith make a complete check and rectify the same.

- (14) SLDC shall periodically review the actual deviation from the dispatch and net drawal schedules being issued to check whether any of the constituents are indulging in unfair gaming or collusion. In case any such practice is detected, the matter shall be reported to the STC for further investigation/action.
- (15) In case the Distribution Licensee having an area of supply in which an aSGS is located has a predominant share in that IaSGS, the concerned parties may mutually agree (for operational convenience) to assign the responsibility of scheduling of the IaSGS to the concerned AEDC. The role of the SLDC in such a case shall be limited to consideration of the schedule for intra-State exchange of power on account of this IaSGS while determining the net drawal schedules of the respective beneficiaries.

5.5 Scheduling and Dispatch Procedure—

- (1) All intra-State generating stations (IaSGS) and inter-State generating stations (ISGS), in whose output more than one beneficiary has an allocated/contracted share shall be duly listed. The station capacities and allocated/contracted shares of different beneficiaries shall also be listed out. Provided that the division of State's allocated share in an ISGS, aSGS amongst the beneficiaries shall be in the proportion as may be determined by the Commission.
- (2) Each beneficiary shall be entitled to a MW dispatch upto foreseen ex power plant MW capability for the day \times (beneficiary's share in the station's capacity) for all such stations. In case of hydro-electric stations, there would also be a limit on daily MWh dispatch equal to MWh generation capacity for the day \times (beneficiary's share in the station's capacity).
- (3) By 10 AM every day the IaSGS shall advise the SLDC the station-wise ex power plant MW and MWh capabilities foreseen for the next day i.e. from 0000 hrs to 2400 hrs of the following day.
- (4) The above information of the foreseen capabilities of the IaSGS along with the entitlements of the State in various ISGS given by RLDC and the corresponding MW and MWh entitlements of each beneficiary shall be compiled by the SLDC every day for the next day and advised to all beneficiaries by 11 AM. The beneficiaries shall review Ivis à vis their foreseen load pattern and their own generating capability including bilateral exchanges, if any and advise the SLDC by 1 PM the drawal schedule for each of the aSGS/ISGS in which they have shares, long term bilateral interchanges, approved short term bilateral interchanges and composite request for day-ahead open access and scheduling of bilateral interchanges.
- Provided that a beneficiary's entitlements for plant wise drawal/bilateral exchanges through the inter-State connections can be determined in lumpsum by the SLDC if it is operationally convenient and feasible to do.
- (5) The beneficiaries may also give standing instructions to the SLDC such that the SLDC itself may decide the drawal schedules for the beneficiaries.
- (6) After considering the dispatch schedule and net drawal schedule for the State as estimated by RLDC by 6 PM each day the SLDC shall convey

The ex-power plant dispatch schedule to each of the aSGS in MW for different hours for the next day. The summation of the ex-power plant drawal schedules advised by all beneficiaries shall constitute the ex-power plant station-wise dispatch schedule for IaSGS.

The net drawal schedule to each beneficiary in MW for different hours for the next day. The summation of the station-wise ex-power plant drawal schedules for all IaSGS/ISGS and drawal from State Grid consequent to bilateral interchanges after deducting the transmission losses estimated shall constitute the beneficiary-wise drawal schedule.

- While finalizing the above daily dispatch schedules for the aSGS, SLDC shall ensure that the same are operationally reasonable particularly in terms of ramping up/ramping down rates and the ratio between minimum and maximum generation levels. A ramping rate of upto 200 MW per hour should generally be acceptable for an aSGS and for a State Constituent except for hydro-electric generating stations which may be able to ramp up/ramp down at a faster rate.

- (B) The beneficiaries/IaSGS may inform any modifications/changes to be made in station-wise drawal schedule & bilateral interchanges /foreseen capabilities if any to SLDC by 9 PM
- (9) Upon receipt of such information the SLDC after consulting the concerned Constituents shall issue the final drawal schedule to each beneficiary and the final dispatch schedule to each IaSGS by 11 30 PM
- (10) Also based on the surpluses foreseen for the next day if any the Constituents may arrange for bilateral exchanges. The schedules for such arrangements shall be intimated latest by 9 PM to SLDC who in turn will take into account these agreed exchanges while issuing the final dispatch, drawal schedules at 11 30 PM provided they would not lead to a transmission constraint and are not objected to by RLDC
- (11) While finalizing the drawal and dispatch schedules as above the SLDC shall also check that the resulting power flows do not give rise to any transmission constraints. In case any constraints are foreseen the SLDC shall moderate the schedules to the required extent under intimation to the concerned Constituents. Any changes in the scheduled quantum of power which are too fast or involve unacceptable large steps may be converted into suitable ramps by the SLDC
- (12) In case of forced outage of a unit the SLDC shall revise the schedules on the basis of revised declared capability. The revised declared capability and the revised schedules shall become effective from the 6th time block counting the time block in which the revision is advised by the IaSGS to be the first one
- (13) In the event of bottleneck in evacuation of power due to any constraint, outage, failure or limitation in the transmission system, associated switchyard and sub stations owned by the State Transmission Utility or any other transmission licensee involved in intra-state transmission as certified by the SLDC necessitating reduction in generation, the SLDC shall revise the schedules which shall become effective from the 6th time block counting the time block in which the bottleneck in evacuation of power has taken place to be the first one. Also during the first, second, third, fourth and fifth time blocks of such an event the scheduled generation of the IaSGS shall be deemed to have been revised to be equal to actual generation and the scheduled drawals of the beneficiaries shall be deemed to have been revised to be equal to their actual drawals
- (14) In case of any grid disturbance scheduled generation of all the IaSGS and scheduled drawal of all the beneficiaries shall be deemed to have been revised to be equal to their actual generation/drawal for all the time blocks affected by the grid disturbance. Certification of grid disturbance and its duration shall be done by the SLDC
- (15) Revision of declared capability by the IaSGS(s), and requisition by beneficiary (ies), for the remaining period of the day shall also be permitted with advance notice. Revised schedules/declared capability in such cases shall become effective from the 8th time block counting the time block in which the request for revision has been received in the SLDC to be the first one
- (16) If at any point of time the SLDC observes that there is need for revision of the schedules in the interest of better system operation it may do so on its own and in such cases the revised schedules shall become effective from the 6th time block, counting the time block in which the revised schedule is issued by the SLDC to be the first one
- (17) To discourage frivolous revisions, an SLDC may, at its sole discretion, refuse to accept schedule capability changes of less than two (2) percent of the previous schedule/capability.
- (18) After the operating day is over at 2400 hours the schedule finally implemented during the day taking into account all before-the-fact changes in dispatch schedule of generating stations and drawal schedule of the beneficiaries shall be issued by SLDC. These schedules shall be the datum for commercial accounting. The average ex-bus capability for each IaSGS shall also be worked out based on a before-the-fact advice to SLDC
- (19) SLDC shall properly document all above information i.e. station-wise foreseen ex-power plant capabilities advised by the generating stations, the drawal schedules advised by beneficiaries, all schedules issued by the SLDC and all revisions/updating of the above

- (20) The procedure for scheduling and the final schedules issued by SLDC shall be open to all Constituents for any checking verification for a period of 5 days. In case any mistake omission is detected the SLDC shall forthwith make a complete check and rectify the same.
- (21) While availability declaration by IaSGS may have a resolution of one (1) MW and one (1) MWh, all entitlements requisitions and schedules shall be rounded off to the nearest decimal to have a resolution of 0.1 MW.

5.6 Reactive Power and Voltage Control-

- (1) Reactive power compensation should ideally be provided locally by generating reactive power as close to the reactive power consumption as possible. The beneficiaries are therefore expected to provide local VAr compensation/generation such that they do not draw VAr from the EHV grid particularly under low-voltage condition. However considering the present limitations this is not being insisted upon. Instead to discourage VAr drawals by Beneficiaries VAr exchanges with IaSTS shall be priced as follows

- i) The Beneficiary pays for VAr drawal when voltage at the metering point is below 97%
- ii) The Beneficiary gets paid for VAr return when voltage is below 97%
- iii) The Beneficiary gets paid for VAr drawal when voltage is above 103%
- iv) The Beneficiary pays for VAr return when voltage is above 103%

Provided that there shall be no charge/payment for VAr drawal/return by a Beneficiary on its own line emanating directly from an IaSGS

- (2) The charge/payment for VAr shall be applicable w.e.f. such date and shall be at a nominal price/kVArh rate as may be specified by the Commission from time to time and will be between the Beneficiary and the State pool account for VAr interchanges
- (3) Notwithstanding the above, SLDC may direct a beneficiary to curtail its VAr drawal in ection in case the security of grid or safety of any equipment is endangered
- (4) In general, the Beneficiaries shall endeavour to minimize the VAr drawal at an interchange point when the voltage at that point is below 95% of rated and shall not return VAr when the voltage is above 105%. ICT taps at the respective drawal points may be changed to control the VAr interchange as per a Beneficiary's request to the SLDC but only at reasonable intervals
- (5) Switching in/out of all 400 kV buses and the Reactors throughout the grid shall be carried out as per instructions of SLDC. Tap changing on all 400/220/132 kV CTs shall also be done as per SLDC's instructions only
- (6) The IaSGS shall generate absorb reactive power as per instructions of SLDC with a capability limits of the respective generating units that are without sacrificing on the active generation required at that time. No payments shall be made to the generating companies for such VAr generation/absorption
- (7) VAr exchange directly between two Beneficiaries on the interconnecting lines owned by them singly or jointly generally address no cause a local voltage problem and generally do not have an impact on the voltage profile of the State Grid. Accordingly the management, control and commercial handling of the VAr exchanges on such lines shall be as per following provisions on case by case basis -
- i) The two concerned Beneficiaries may mutually agree not to have any charge/payment for VAr exchanges between them on an interconnecting line
 - ii) The two concerned Beneficiaries may mutually agree to adopt a payment rate/scheme for VAr exchanges between them identical or at variance from that specified by the Commission for VAr exchanges with IaSGS. If the agreed scheme requires any additional metering, the same shall be arranged by the concerned Beneficiaries

- (iii) In case of a disagreement between the concerned Beneficiaries, e.g. one party wanting to have the charge/payment for VAr exchanges and the other party refusing to have the scheme, the scheme as specified in Annexure-2 shall be applied. The per kvA/h rate shall be as specified by the Commission for VAr exchanges with IaSTS.
- (iv) The computation and payments for such VAr exchanges shall be effected as mutually agreed between the two Beneficiaries.

Annexure-1

[refer Regulation 5.1 (iv)]

COMPLEMENTARY COMMERCIAL MECHANISMS

(Applicable w.e.f such date as may be decided by Commission for introduction of intra-State ABT,

- (1) The beneficiaries shall pay to the respective IaSGS Capacity Charges corresponding to plant availability and Energy Charges for the scheduled dispatch, as per the relevant notifications and orders of the Commission. The bills for these charges shall be issued by the respective IaSGS to each beneficiary on monthly basis.
- (2) The sum of the above two charges from all beneficiaries shall fully reimburse the IaSGS for generation according to the given dispatch schedule. In case of a deviation from the dispatch schedule, the concerned IaSGS shall be additionally paid for excess generation through the UI mechanism. In case of actual generation being below the given dispatch schedule, the concerned IaSGS shall pay back through the UI mechanism for the shortfall in generation as and when approved by the Commission.
- (3) The summation of station-wise ex-power plant dispatch schedules from each IaSGS, SGS and any bi-laterally agreed interchanges of each beneficiary shall be adjusted for transmission losses and the net drawal schedule so calculated shall be compared with the actual net drawal of the beneficiary. In case of excess drawal, the beneficiary shall be required to pay through the UI mechanism for the excess energy. In case of under-drawal, the beneficiary shall be paid back through the UI mechanism for the energy not drawn.
- (4) When requested by a constituent, SLDC shall assist the constituent in locating a buyer/seller and arranging a scheduled interchange within the State or across the State boundary. The SLDC shall act only as a facilitator (not a trader/broker) and shall assume no liabilities under the agreement between the two parties, except:
 - I ascertain that no component of the power system of any other constituent shall be over-stressed by such interchange/trade, and
 - II incorporating the agreed interchange/trade in the net interchange schedules for the concerned Constituents.
- (5) On the basis of actual drawals/injections by State Constituents and the REA, State Energy Accounts and the statement of UI charges shall be prepared by the SLDC on a weekly basis and these shall be issued to all Constituents by Monday for the seven day period ending on the Sunday mid-night immediately preceding the previous Sunday. Payment of UI charges shall have a high priority and the concerned Constituents shall pay the indicated amounts within 7 (seven) days of the statement issue into a State UI pool account operated by the SLDC. The agencies who have to receive the money on account of UI charges would then be paid out from the State UI pool account within five (5) working days.
- (6) The SLDC shall also issue the weekly statement for VAr charges to all Constituents who have a net drawal/injection of reactive energy under low/high voltage conditions. These payments shall also have a high priority and the concerned Constituents shall pay the indicated amounts into State reactive account operated by the SLDC within 7 (seven) days of statement issue. The Constituents who have to receive the money on account of VAr charges would then be paid out from the State reactive account, within five (5) working days.

- (7) If payments against the above UI and VAr charges are delayed by more than two days, i.e., beyond nine (9) days from statement issue, the defaulting Constituent shall have to pay simple interest @ 0.04% for each day of delay. The interest so collected shall be paid to the Constituents who had to receive the amount, payment of which got delayed. Persistent payment defaults, if any, shall be reported by the SLDC to the STU, for initiating remedial action.
- (8) The money remaining in the State reactive account after pay-out of all VAr charges upto 31st March of every year shall be utilized for training of the SLDC operators and other similar purposes which would help in improving/streamlining the operation of the State Grid, as decided by the STU from time to time.
- (9) In case the voltage profile of State Grid improves to an extent that the total pay-out from the State VAr charges account for a week exceeds the total amount being paid-in for that week and if the State reactive account has no balance to meet the deficit, the pay-outs shall be proportionately reduced according to the total money available in the above account.
- (10) The SLDC shall table the complete statement of the State UI account and the State Reactive Energy account in the GCC meeting, on a quarterly basis, for audit by the latter.
- (11) All 15-minute energy figures (net scheduled, actually metered and UI) shall be rounded off to the nearest 0.01 MWh.

Annexure-2

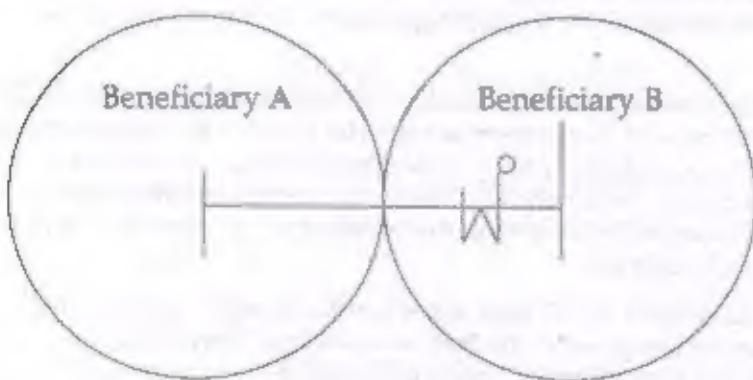
[refer Regulation 5.6(7)(iii)]

Payment for Reactive Energy Exchanges on Beneficiary Owned Lines

Case - 1:

Interconnecting line owned by Beneficiary-A

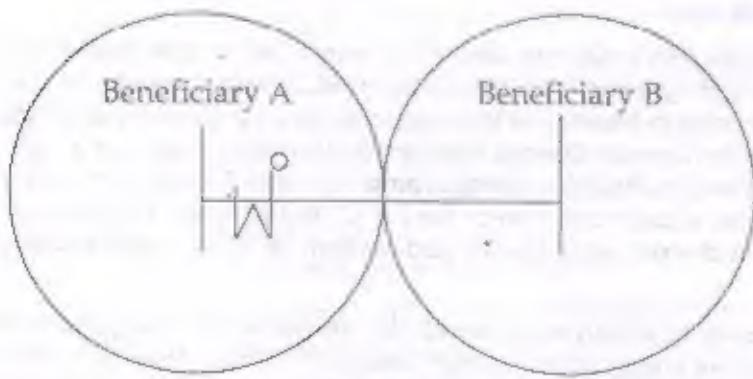
Metering Point: Substation of Beneficiary-B



Case - 2:

Interconnecting line owned by State-B

Metering Point: Substation of Beneficiary-A

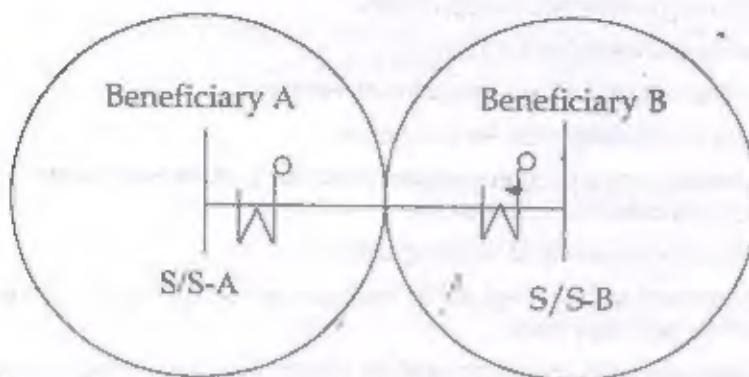


Beneficiary-B pays to Beneficiary-A for

- (i) Net VArh received from Beneficiary-A while voltage is below 97%, and
 - (ii) Net VArh supplied to Beneficiary-A while voltage is above 103%.
- Note: Net VArh and net payments may be positive or negative.

Case-3:

Interconnecting line is jointly owned by Beneficiary-A and-B.
Metering points: Substations of Beneficiary -A and Beneficiary -B.



Net VArh exported from S/S-A, while voltage < 97% = X1

Net VArh exported from S/S-A, while voltage > 103% = X2

Net VArh imported at S/S-B, while voltage < 97% = X3

Net VArh imported at S/S-B, while voltage > 103% = X4

(i) Beneficiary -B pays to Beneficiary -A for

X1 or X3, whichever is smaller in magnitude, and

(ii) Beneficiary -A pays to Beneficiary -B for

X2 or X4, whichever is smaller in magnitude.

Note:

1. Net VArh and net payment may be positive or negative.

2. In case X1 is positive and X3 is negative, or vice-versa, there would be no payment under (i) above.

3. In case X2 is positive and X4 is negative, or vice-versa, there would be no payment under (ii) above.

CHAPTER 6--METERING CODE

6.1 Metering requirements

- (1) The State Transmission Utility shall develop a Metering Code and submit the same to the Commission for its approval within sixty (60) days of notification of these Regulations.
Provided that till the time the Metering Code as mentioned above is developed and approved by the Commission, the provisions of prevailing relevant statutes shall be applicable.
- (2) Metering Code shall provide the minimum requirements and standards for Installation and Operation of meters, for commercial and operational purposes, to be provided by User or Transmission Licensee at the Connection Point.
Provided that such requirements shall be consistent with the regulations as may be specified by the Authority under section 55 of the Act.
Provided further that such requirements shall be applicable to any other point that may be internal to the power system of the User or Transmission Licensee if information captured by such meter shall be required for commercial or operational purposes.
- (3) The Commission shall review the Metering Code submitted for approval by the State Transmission Utility and shall either-
 - (i) approve the Metering Code, with such conditions or modifications as the Commission may deem appropriate, or
 - (ii) reject the Metering Code for reasons to be recorded in writing if the Metering Code is not in accordance with the Act or these Regulations or with the Grid Code specified under clause (h) of sub-section (1) of Section 79 of the Act and direct the State Transmission Utility to submit a revised draft Metering Code.

- (4) The State Transmission Utility shall put up a copy of the Metering Code on its Internet website and make available a copy of the applicable Metering Code to any person requesting it, at a price not exceeding the reasonable cost of reproducing it.
- (5) Metering Code shall clearly identify the concerned agency, i.e. User or Transmission Licensee, responsible for ownership and maintenance of the meters.
- (6) Metering Code shall include and describe the following:
 - (i) provisions related to location and installation of meters;
 - (ii) specifications and accuracy limits for the meters;
 - (iii) rights, responsibilities and procedures related to recording, collection, transfer, processing and storage of data collected from meters;
 - (iv) provisions related to ownership of metering data;
 - (v) calibration procedures to be carried out by each concerned agency to ensure conformance to the above accuracy limits;
 - (vi) procedures associated with maintenance of the meters in proper functioning state, safety of meters, testing of the new or replacement meters, sealing of meters and inspection of meters;
 - (vii) provisions related to right of access to the meters;
 - (viii) procedures to address metering discrepancies, defective equipments and meter failures;
 - (ix) procedures for resolution of disputes on matters related to metering; and
 - (x) Any other aspect considered appropriate, for inclusion in the Metering Code, by the State Transmission Utility or the Commission.

CHAPTER 7-INTER-STATE EXCHANGES

7.1 Introduction--

- (1) The special considerations to be applied for operation of these links are set out in this Chapter.
- (2) The stipulations in this chapter may be supplemented by STU (as operator of SLDC) depending on operational needs. They may also need revision/updating as and when further inter-State links come into operation. In due course, this responsibility may be transferred to the STU, and this Chapter withdrawn from SGC.
- (3) Since the present inter-State links are AC links synchronised to Northern Regional Grid, the power inter-changes between State and the Northern Grid depend on relative load-generation balances in the State and other Regional Constituents.

7.2 Scheduling of IaSGS--

- (1) All IaSGS shall be scheduled through the SLDC of the State, even if they have Beneficiaries in other States. In other words, an IaSGS shall interact with the host SLDC only. For allocations to Beneficiaries in other States, the host SLDC shall interact with the concerned RLDC through NRLDC, as per modalities worked out between them. The concerned RLDC shall in turn interact with the SLDC of the respective Beneficiary and then revert to the NRLDC.
- (2) SLDC shall estimate and apportion transmission losses within the State, if possible voltage level-wise, on pooled basis and add to them the inter-State transmission losses outside the State for the purpose of determining the drawal schedules of the Beneficiaries and inter-State schedules with a resolution of 0.1 MW.

7.3 Demarcation of Scheduling Responsibilities--

- (1) SLDC shall schedule the interchanges of State with other States/Regions.
- (2) The SLDC shall schedule the interchange of power of NR Grid, limiting the scheduled import to a level keeping an adequate security margin on the inter-State links. It shall also monitor the power flow on inter-State ties, and in the event of overloading may request NRLDC to divert/reduce some power flow. If the required assistance is not forthcoming or is not possible, SLDC shall order any necessary preventive action in its own region.

- (3) It is expected that in the normal course, with all major transmission elements available, there would be no transmission constraints between State and NR Grid. If any constraints do arise, the SLDC shall coordinate with NRLDC if necessary, to remedy the situation.

7.4 Interfaces For Scheduling and UI Accounting—

- (1) A list of existing State boundaries along with their capacities, voltage, special features etc. shall be prepared by SLDC and updated regularly to reflect current position of inter-State links for scheduling, metering and UI accounting of inter-State exchanges.
- (2) The inter-State exchanges of UI shall be at the UI rate in NR. Payments for inter-State UI exchanges shall be between the State and Regional UI pool accounts. Provided that existing arrangement shall continue till the State pool account becomes operational after implementation of intra-State ABT.
- (3) No attempt shall be made to split the inter-State schedules into link-wise schedules.

CHAPTER 8—MANAGEMENT OF STATE GRID CODE

8.1 Management of SGC--

- (1) The State Grid Code (SGC) shall be specified by the Commission. Any amendment to SGC shall also be specified by the Commission only.
- (2) State Grid Code shall be reviewed by the Grid Coordination Committee at least once in every twelve (12) months.
- (3) Upon completion of such review, the Grid Coordination Committee shall send a report to the State Transmission Utility providing information regarding:
 - (i) outcome of the review; and
 - (ii) Any proposed revisions to the State Grid Code.
- (4) The State Transmission Utility shall send the report, referred in sub-Regulation (3) to the Commission.
- (5) The SGC and its amendments shall be finalized and notified adopting the prescribed procedure followed for regulations issued by the Commission.
- (6) The requests for amendments to / modifications in the SGC and for removal of difficulties shall be addressed to Secretary to the Commission, for periodic consideration, consultation and disposal.
- (7) Any dispute or query regarding interpretation of SGC may be addressed to Secretary to the Commission and clarification issued by the Commission shall be taken as final and binding on all concerned.

8.2 Power to amend--

The Commission may, at anytime, vary, alter, modify or amend any provisions of these Regulations

8.3 Power to remove difficulties--

If any difficulty arises in giving effect to the provisions of these Regulations, the Commission may, by general or specific order, make such provisions not inconsistent with the provisions of the Act, as may appear to be necessary for removing the difficulty.

By Order of the Commission,

ANAND KUMAR
Secretary
Uttarakhand Electricity Regulatory Commission

पी०एस०य० (आर०ई०) १७ हिन्दी गजट / १६६—माग १—२००७ (कम्प्यूटर/रीजियो)।

मुद्रक एवं प्रकाशक—उप निदेशक, राजकीय मुद्रणालय, उत्तराखण्ड, रुडकी।